

Adventive species of *Quedius* (Coleoptera, Staphylinidae) in North America: a survey and new Canadian record

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Abstract

The adventive rove beetle, *Quedius cinctus* (Paykull) is recorded for the first time in Canada. This discovery provides an opportunity to briefly survey the distribution and early dates of detection of the seven adventive species in the genus *Quedius* Stephens in North America.

Keywords

Coleoptera, Canada, New Brunswick, Staphylinidae, Staphylininae, *Quedius*, range extensions, distribution gaps

Introduction

In recent years there has been a considerable interest in adventive species of the genus *Quedius* Stephens (Staphylinidae: Staphylininae), seven of which have now been recorded in North America.

Quedius mesomelinus (Marsham, 1802) was first reported in North America from the state of Washington by Hatch (1949) from specimens dating as early as 1904. Smetana (1971) subsequently reported it from as early as 1886 from Massachusetts, while Prévost and Bain (2006) found preserved remains of this species in a latrine in Ferryland, Newfoundland that date from circa 1620. It is now widely distributed in North

America from Newfoundland and Florida, west to Nevada and British Columbia, and on the Aleutian Islands (Smetana 1971).

Quedius fulgidus (Fabricius, 1793) was first reported in North America by Say (1834) under the name *Quedius iracundus* Say [synonymized by Smetana (1971)]. The earliest specimen examined by Smetana (1971) was from 1874 (Iowa). It is now widely distributed in the United States from Massachusetts and Georgia, west to southern California and Washington. There are also records in Canada from southern portions of British Columbia and Manitoba (Smetana 1971).

Quedius curtipennis Bernhauer, 1908 was first collected in North America in 1934 in the state of Washington (Hatch 1957) [reported as *Q. parallelus* Hatch; synonymized by Smetana (1971)]. The initial records were from Washington, Oregon, and British Columbia on the Pacific coast (Smetana 1971), although there are now records on the Atlantic coast from New Hampshire (Smetana 1990), New Brunswick, and Nova Scotia (Majka and Smetana 2007).

Quedius molochinus (Gravenhorst, 1806) was first collected in North America in St. John's, Newfoundland by C.H. Lindroth in 1949. It was later found in the Québec City area in 1974 (Smetana 1965, 1971, 1981). Majka (2007) subsequently reported it from specimens collected in Nova Scotia (2002) and Prince Edward Island (2006).

Quedius cruentus (Olivier, 1795) was first reported in North America by Gusarov (2001) based on a single specimen collected in 1998 in New York state. Subsequently Hoebeke (2008) reported many records of this species from Ohio to New Jersey, north to southern Québec and central Maine from as early as 1983.

Quedius fuliginosus (Gravenhorst, 1802) was reported in North America by Majka and Smetana (2007) from collections made in Nova Scotia (1996–2001). To date, it has only been reported from that province.

Quedius cinctus (Paykull, 1790) was reported in North America by Smetana (1971) from Framingham and Fall River in Massachusetts from specimens collected between 1949–57. Subsequently Smetana (1990) reported specimens from New Jersey (1942), New York (1974–87), and Washington state (1979) (Fig. 1).

Results

In the present paper we report *Quedius cinctus* from New Brunswick, Canada, from three specimens collected in Bouctouche, Kent County (46° 25' 39.56" N, 64° 45' 50.35" W) on 27 September 2007 (Fig. 2). The specimens were recovered on a domestic pig (*Sus scrofa*) carcass that had decomposed for 22 days in an agricultural field. For a comprehensive description of field characteristics and of the methods used to collect specimens, see Michaud and Moreau (2009). These are the first records of this adventive species in Canada. This location is some 700 km from Framingham, Massachusetts, the nearest locality where *Q. cinctus* has been previously recorded.



Figure 1. Distribution of *Quedius cinctus* in eastern North America (Smetana 1971, 1990). A specimen collected in Seattle, Washington, on the Pacific coast of the USA is not shown.

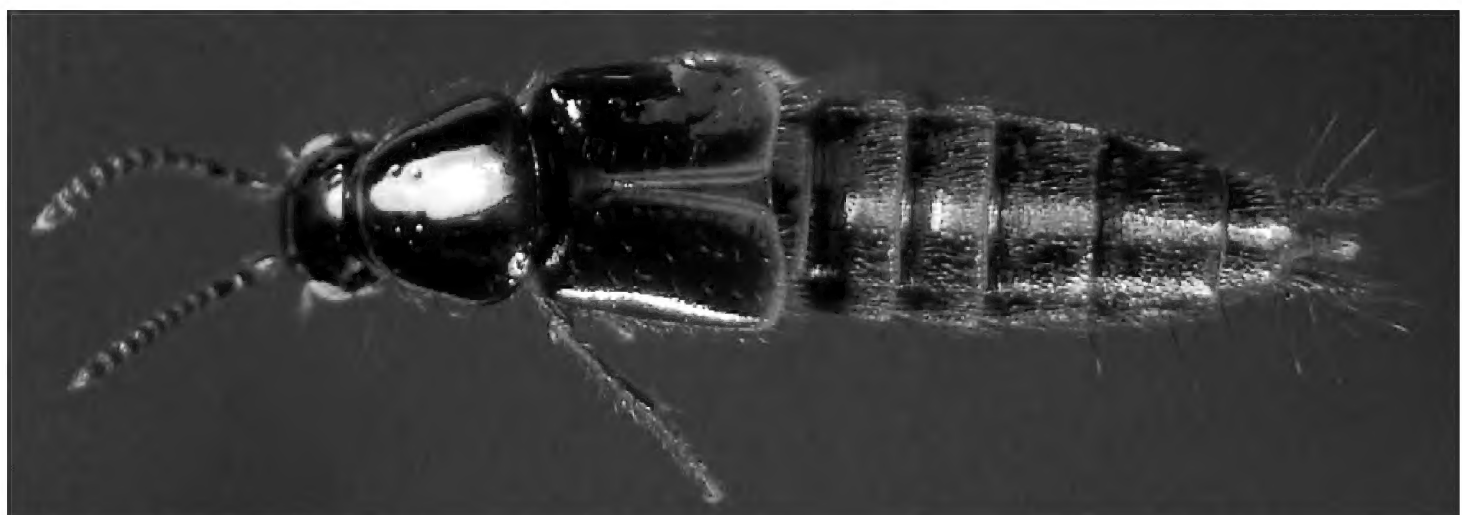


Figure 2. Dorsal habitus photograph of *Quedius cinctus*.

Discussion

Bouctouche is a coastal community located where the Bouctouche River flows into the Gulf of St. Lawrence. It has been settled since 1785 and has a long history of immigration, fishing, and shipping (Cormier 1984). Lindroth (1957) established that many adventive terricolous beetles were brought to the New World in association with the shipment of dry ballast, a practice that continued from the time of the Napoleonic Wars (1799–1815) until after World War I. Smetana (1971: 167) also noted that, “In Europe this species lives mainly in decaying organic substances of any kind, very often near or directly in human settlements. The introduction of this species to North America is therefore not very surprising.” Consequently a coastal community such as Bouctouche could have provided a variety of opportunities for the introduction and establishment of a species such as *Q. cinctus*, either in association with shipping practices, or with the importation of livestock or other agricultural products. It remains to be ascertained how widely distributed this species is in New Brunswick.

It is clear that species such as *Q. mesomelinus* and *Q. fulgidus* have been present in North America for centuries, and are now widely distributed on the continent. The extensive distribution of *Q. cruentus* in northeastern North America raises the question of whether it also has been present for a considerable period, or if it is in the process of rapid dispersal. *Quedius cinctus* and *Q. curtipennis* have a much more restricted distribution, although both species have been introduced to both Atlantic and Pacific coastal areas in North America. *Quedius molochinus* and *Q. fuliginosus* appear restricted to portions of eastern Canada. Continued monitoring of these species will be instructive in ascertaining the future dispersal pathways of these closely related species.

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References

- Cormier PA (1984) Bouctouche of the Past. Bouctouche, New Brunswick, Canada, Bouctouche Bicentennial Committee, 204 pp.
- Gusarov VI (2001) *Quedius cruentus* (Olivier) (Coleoptera, Staphylinidae), a Palearctic species new to North America. The Coleopterists Bulletin 55(3): 374–377.
- Hatch MH (1949) Studies on the fauna of Pacific Northwest greenhouses (Isopoda, Coleoptera, Dermaptera, Orthoptera, Gastropoda). Journal of the New York Entomological Society 57: 141–165.

- Hatch MH (1957) The Beetles of the Pacific Northwest. II Staphyliniformia. University of Washington Publications in Biology 16(2): 1–384.
- Hoebeke ER (2008) New records of *Quedius cruentus* (Olivier), a Palearctic rove beetle (Coleoptera, Staphylinidae), in northeastern North America. Proceedings of the Entomological Society of Washington 110(2): 391–396.
- Lindroth CH (1957) The faunal connections between Europe and North America. Almqvist & Wiksell, Stockholm, Sweden, 344 pp.
- Majka CG (2007) *Quedius molochinus* (Coleoptera: Staphylinidae) newly recorded in the Maritime Provinces of Canada. Proceedings of the Entomological Society of Washington, 109(4): 958–959.
- Majka CG, Smetana A (2007) New records of introduced species of *Quedius* Stephens, 1829 (Coleoptera: Staphylinidae) from the Maritime Provinces of Canada. Proceedings of the Entomological Society of Washington 109(2): 427–434.
- Michaud J-P, Moreau G (2009) Predicting the visitation of carcasses by carrion-related insects under different rates of degree-day accumulation. Forensic Science International 185: 78–83.
- Prévost M-A, Bain A (2006) L'implantation d'une colonie terre-neuvienne au XVIIe siècle: l'apport des analyses archéobotanique et archéontomologique (2000–2006). In: Bain A, Chabot J, Moussette M, (Eds) La mesure du passé: contributions à la recherche en archéométrie (2000–2006). British Archaeological Reports, International Series number 1700. Archaeopress, Oxford, 205–216.
- Say T (1834) Descriptions of new North American insects and observations on some already described. Transactions of the American Philosophical Society 4: 409–471.
- Smetana A (1965) Staphylinini und Quediini (Col., Staphylinidae) von Newfoundland, Südst-Labrador und Nova Scotia. Acta Entomologica Fennica 20: 1–60.
- Smetana A (1971) Revision of the tribe Quediini of America north of Mexico (Coleoptera: Staphylinidae). Memoirs of the Entomological Society of Canada 79: 1–303.
- Smetana A (1981) Revision of the tribe Quediini of America North of Mexico (Coleoptera: Staphylinidae). Supplementum 5. The Canadian Entomologist 113: 631–644.
- Smetana A (1990) Revision of the tribe Quediini of America North of Mexico (Coleoptera: Staphylinidae). Supplementum 6. The Coleopterists Bulletin 44: 95–104.

